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## Rorschach Estimates of Personality Attributes in the Michigan Assessment Project

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W. W. M.

*Iowa City, Iowa  
June 8, 1931*

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# RORSCHACH ESTIMATES OF PERSONALITY ATTRIBUTES IN THE MICHIGAN ASSESSMENT PROJECT

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## CHAPTER I INTRODUCTION

THE present research stems directly from the University of Michigan Assessment of Clinical Psychologists Project which is being conducted under contract with the Veterans Administration. This is a large-scale, joint research program designed to determine experimentally the necessary qualifications of a clinical psychologist. In its very design it offers numerous subsidiary opportunities to test the validity of the techniques employed in the project. One of these

techniques is the Rorschach method, which is the one studied in this investigation.

The purposes of this research are: (a) to demonstrate that by using data obtained by means of the Rorschach method, valid estimates of personality variables may be obtained; and (b) to compare clinical estimates with those based upon specific Rorschach scores or patterns of scores reputed to be descriptive of the variable in question.

## CHAPTER II PROCEDURES AND METHODS

### A. THE UNIVERSITY OF MICHIGAN PROJECT IN THE SELECTION OF CLINICAL PSYCHOLOGISTS<sup>1</sup>

THE present description will be limited to the Ann Arbor program carried out during the summer of 1947, since the data which serve as the basis of the study come from that phase of the

total research project. As described in the project's first *Progress Report and Preliminary Findings* (6), the professional staff in 1947 consisted of thirty members, including two VA psychiatrists and several VA psychologists. Other staff members were psychologists drawn from five different universities and several other institutions. This resulted in considerable diversity of background, training, and viewpoint.

The subjects were student VA trainees,

<sup>1</sup>This was a five-year study conducted under contract with the Veterans Administration dating from September 1946, under the direction of Prof. E. Lowell Kelly, Project Director.

already accepted for training by one of the cooperating universities. They came to Ann Arbor in six successive classes of 24 each at nine-day intervals, each class remaining for seven days. Each class was divided into six teams of four students each. Each student team was studied intensively by a staff team of three members.

#### B. THE ASSESSMENT PROJECT RATING SCALES

A rating scale which would permit of clinical judgments on a variety of personality attributes was first tried in the 1946 preliminary program and revised for the 1947 program. The ratings on this revised rating scale form the basis for the assessment research (see Appendix A).

This rating scale has three parts: *Scale A* was intended to cover primarily phenotypic variables, *descriptive* of the subject as seen by the staff at the time of assessment. Including 22 variables, it was constructed with the help of Professor Raymond Cattell on the basis of his several factorial studies of personality ratings (2).

*Scale B* was intended to provide judgments of more genotypic variables, i.e., *evaluative* judgments of broader underlying variables, again as seen by the staff at the time of assessment. It includes 10 variables.

*Scale C* includes a list of 11 criterion variables on which staff members were asked to make predictive judgments relative to the future performance of each candidate (five years after assessment).

All ratings were made on an 8-point scale, with a theoretical distribution of ratings as follows:

8 Upper 3% of a population of first-year graduate students.

7 Upper 7% of a population of first-year graduate students.

6 Upper 15% of a population of first-year graduate students.

5 Upper 25% of a population of first-year graduate students.

4 Lower 25% of a population of first-year graduate students.

3 Lower 15% of a population of first-year graduate students.

2 Lower 7% of a population of first-year graduate students.

1 Lower 3% of a population of first-year graduate students.

For *Scale C*, the reference population was VA trainees five years after assessment. Staff members were instructed to give anyone who they believed would fail in the training program a rating of 1, 2, or 3 on Item 42 ("over-all suitability for clinical psychology").

#### C. THE CANDIDATE'S SCHEDULE

Upon arriving in Ann Arbor and reporting to the sorority house being used for housing and the actual assessment research, the assembled candidates were given a welcoming speech by the Project Director, who indicated the general nature of the program. They were told in a general way what was expected of them and assured that strict professional confidence would be maintained for all personal material gathered by the project.

That same morning the group was given a battery of objective tests. At lunch, as at all meals during the first five days, each team sat at a specified table, along with any two staff members who would not be evaluating that team. In the afternoon of the first day, the class continued taking group tests. Before the end of three days, the following tests had been taken: the Thematic Apperception Test (10 cards), the Project Sentence Completion Test, Miller Analogies, Thurstone's Primary Mental Abilities, the Allport-Vernon Study of Values, Strong Vocational Interest Blank, Guilford-Martin Battery (Inventory of Factors STDOR, GAMIN, and Personnel Inventory I), and the Minnesota Multiphasic Personality Inventory. During the third day or, sometimes, the next day, each subject took the Rorschach and the Bender-Gestalt Test, each at separate sessions.

The first afternoon, each student had an "Initial Interview" lasting one hour. The interviewer, unknown to the subject, had already studied the student's "credentials file," i.e., ma-

materials he had submitted with his application to the university. These included the transcript of his college grades, his Civil Service Form 57, and letters of recommendation submitted in his behalf. This interview was searching but not deep lest anxiety be aroused in the subject.

During the evening of the first day, each subject filled out a Biographical Inventory, which contained over a hundred multiple-choice items about background, personal history, experiences, and preferences. He also received an outline for an autobiography he was to write within the next two days.

On the third day, more objective tests were administered including the Kuder Preference Record and the ACE Culture Test. The Strong was taken twice more: once, he filled it out as he thought it would be answered by "women in general" and finally as he thought it would be answered by "men in general." These results were not made available to the assessment staff.

Late that afternoon, each subject met his "intensive interviewer," the staff member whom he would get to know best and the person whose job it was to get to know the assigned student best. This interview was thorough and probing. By the nature of the interviewer's questions, it was obvious to each student that the interviewer had carefully examined his credentials, autobiography, Biographical Inventory, test scores, and the other materials on which the student had spent three days.

The fourth day was free for relaxation and sightseeing. The fifth day was spent in a variety of situational procedures which were observed by staff members. These situations were of three kinds: (1) a group, or team situation, in which from four to eight students participated jointly, (2) dual situations, and (3) individual situations, in which each student participated alone, in the presence of staff members only.

On the morning of the last day, the students gathered in the group testing room for their last written work, which was the completion of a sociometric questionnaire concerning his reactions to his classmates, and a rating of himself and his three teammates.

Following this, he had a final individual appointment with his interviewer. Usually the student went to this interview expecting to learn the staff's opinion of him, but came away with relatively little information, such as test scores, etc.

#### D. THE STAFF SCHEDULE

Much of the staff time allotments can be judged from the foregoing description of student activities. Only the more important aspects of staff activities not clearly indicated above will be discussed in this section.

During the earlier portion of the week the intensive interviewer prepared for his intensive interview with the student assigned to him by studying, in order, (1) the credentials file, (2) the objective test profiles and answer sheets, (3) the autobiography and biographical inventory, (4) the projective test protocols and their interpretations. After each of these four sets of materials he made ratings on Scales B and C. Thus, each of the four sets of ratings was based on a cumulative collection of materials. Each rating was filed before making his next rating.

The projective tests were handled as follows: each student took both the Rorschach and the Bender-Gestalt Tests individually. Each was interpreted and summarized by the administrator of the test. The Thematic Apperception Test and the Sentence Completion Tests were administered as group tests and were analyzed by various staff members. *No staff member analyzed more than one projective test for any one subject.* In addition to the qualitative interpretation, the projective analyst made ratings on the variables of Scale B and Scale C on the basis of each projective protocol. Thus, four sets of ratings on Scale B and Scale C each, were based on individual projective techniques alone. In addition, a "projective integrator" made ratings based on all of the projective data collected.

The interviewer usually spent about four hours preparing for the intensive interview. After the interview, which lasted about two hours, ratings on Scale B and Scale C were made once again.

At this point, each team of three staff members held a conference to discuss their four students. These preliminary conferences had two purposes: the first was to discuss the case and, by subjectively pooling the three individual and independent ratings on each variable, to arrive at a pooled or team rating on each variable; the second was to provide for a full exchange of data and opinion about each case—with both the initial and the intensive interviewers reporting on their interviews.

On the following day, each staff team observed its four students in the situational procedures. Separate ratings were not made after each situation; staff team ratings were made from notes the next day on the four students observed. The preliminary pooling conference consisted in each staff member's making a set of ratings based on his total impression of the student up to and including the situation tests. The interviewers then held Final Interviews with the students whom they had first seen in Intensive Interviews. The substance of this interview was reported to the other two team members. The staff members then examined the tabulations of the sociometric questionnaire and studied the teammates' ratings of each other and the stu-

dent self-ratings. They also read the character sketches to determine how each student appeared in the eyes of his teammates and to estimate the insight of the author of each sketch. Also, for the first time, they were permitted to examine all the ratings which had previously been made on each subject. Upon the basis of all of these data a new rating, the Final Individual Rating on each variable, was made. These last were taken by each staff team member to the Final Team Conference at which the staff team made its best judgments about each case *in the light of the entire week's assessment*. This comprehensive report considered many aspects of the person: his emotional life, his intellectual functioning, his relations with others, his motivation for clinical psychology, etc. From a research point of view, its most important function was to record qualifications about certain ratings: e.g., the staff might rate a certain case with the understanding that he would soon be undergoing psychotherapy.

The ratings coming out of this conference for each student were designated the *Final Pooled Ratings*. Since it is the most comprehensive and inclusive set of ratings which was made during the program and since it involved the pooled judgments of skilled clinicians who had been afforded ample opportunity to "get to know each subject as God knows him," it is proposed to use those ratings as criterion ratings in the present investigation.

#### E. SUBJECTS, DATA, AND STATISTICAL DESIGN

In the present study, the subjects consist of a group of 120 male students assessed during the 1947 summer program in Ann Arbor. All were student VA trainees who had already been accepted for training by one of the cooperating universities.

The data to be analyzed are drawn from three sources: (1) the final pooled ratings (criterion ratings) on the ten variables comprising Scale B, and on Variable 42 of Scale C ("over-all suitability for clinical psychology"); (2) the ratings on the same variables made by the Rorschach examiners, based upon information they obtained from the Rorschach records; and (3) Rorschach scores and patterns obtained directly from the Rorschach records.

Only Scale B variables are being used because Rorschach ratings were not always made on Scale A during the assessment program and because it is felt that most of the items on Scale C are too specifically oriented toward professional skills and, hence, remote from the usual type of data reportedly gleaned from Rorschach results. On the other hand, it is rather universally held that the Rorschach method taps more covert, genotypic personality attributes and this is the definition of the Scale B variables.

Six Rorschach examiners administered approximately four records each during each week of assessment. Each scored the records, following whatever system was familiar to him, most using the scoring symbols designated by Klopfer (3), although some used Beck's categories (1), while one used a system combining features of both of these. For the sake of uniformity, all scores were studied by the writer and converted to those of Klopfer insofar as information available in the records permitted.

It is proposed to correlate the ratings made by the Rorschach examiners (hereinafter designated "Judges") with the final pooled ratings (hereinafter designated "Criterion") variable-by-variable, in order to determine the extent to which judgments based on Rorschach information will approximate the criterion judgments. Since six judges are involved in making the Rorschach ratings, the degree to which the criterion is estimated by the individual judges will be studied by means of running correlations between the ratings of each judge and the criterion ratings. This will result in an array of six correlations for each variable and each of such arrays will be tested by Rider's technique (5) for determining the homogeneity of a distribution of correlation coefficients.

In half of the criterion teams the Rorschach examiner was a functioning team member. Since this introduces the possibility of contamination in the criterion ratings, the data will be split into contaminated and uncontaminated groups and separate correlations computed for each group. Under ordinary circumstances of contamination it might be expected that the contaminated data would show higher correlations than the uncontaminated.

The study of individual Rorschach scores and patterns descriptive of the several variables involved will be discussed individually.

*Social Adjustment:* The scores and patterns to be used in predicting this variable (Variable 23b) are listed below. The rationale behind the selection of these particular Rorschach factors lies in the interpretative values assigned to them in the literature.

1. Normatively, the number of responses usually given to the ten ink-blot designs by healthy, normal adults ranges from 30 to 40. In varying degrees of social maladjustment, it has been observed that the number of responses frequently is less than this, often ranging downward from 25 responses. Miale and Harrower-Erickson (4), for example, report a heterogeneous group of neurotics as giving an average of only 13 responses, only three cases producing more than 25 responses. Their normal control group averaged 36 responses by comparison. Decreased productivity is often interpreted as reflecting one who is ill at ease and lacking in drive and spontaneity. In the present investigation, therefore, the tendency to give less than 25 responses will be taken as a partial indication of social maladjustment.

2. *Human movement responses* are ordinarily interpreted as indicating the subject's degree of inner maturity and stability. Normally two or more of such responses are expected; less than this number suggests a lack of these characteristics. Miale's neurotics, for instance, averaged only 1.1 *M* while the normal controls averaged 5.5 and all had produced two or more of this type of response. Less than two *M* responses will be regarded as a second partial sign of maladjustment.

3. *Animal movement responses*, designated as *FM*, are interpreted as more primitive, infantile

inner drives in contrast to the more mature human movement responses. Normally it is expected that in healthy adults, *M* will exceed *FM*, usually by two to one. In Miale's neurotic group, 67 per cent of the records showed *FM* to be greater than *M*; the normals produced more *M* than *FM* in 70 per cent of the records. Indications of such an excess of immaturity in the inner life in the records of the assessment group will be taken, therefore, to be related to social maladjustment.

4. *Color responses* in general in Rorschach interpretation are reputedly related to emotional responsiveness to affectively toned stimuli from the subject's environment. Form responses are interpreted as indicating intellectual control. Hence, responses determined by a combination of form and color, with form elements predominating (*FC*), are reflective of controlled emotionality, hence, emotional adjustment. Two or more of such responses are normally expected. Neurotics, according to Miale's study, produce an average of only 0.6 *FC* responses while her normal controls averaged 3.1; stated differently, 81 per cent of the neurotics gave no more than one *FC* and an equal per cent of the normals gave more than one. In fact, 70 per cent of the neurotics produced no *FC* responses at all. For this reason, less than two *FC* responses will be regarded as indicative of a lack of emotional adjustment and more than two as suggestive of good emotional adjustment and good rapport with others.

5. Another pattern, related to the previous one, but more indicative of emotional imbalance, excitability, and egocentricity is given by the extent to which responses in which intellectual control is subordinated to emotionality (*CF*) or in which intellectual control is completely lacking (*C*) exceed the more controlled *FC* responses. Such imbalance and egocentricity is posited as indicating social maladjustment.

6. Normally 30 to 50 per cent of Rorschach responses involve the perception of animal figures. A per cent of responses in excess of 50 per cent is regarded as mental stereotypy. In 58 per cent of Miale's neurotic cases animal responses constituted over half of the responses; only 25 per cent of the normals showed this sign. Thus, over 50 per cent animal responses in the present records is interpreted as indicating a lack of spontaneity associated with social maladjustment.

7. Also related to spontaneity in Rorschach interpretation is the per cent of responses determined by form alone. Too high a per cent of form responses is interpreted as a restriction of spontaneity, with an attempt to substitute intellectual control for genuine adjustment. Normally, 30 to 50 per cent of the total number of responses is expected to be determined by pure form. Fifty-

one per cent of Miale's neurotics showed this sign compared with only 20 per cent among the normals. Following this, subjects who produced over 50 per cent form responses are regarded as having one more sign of social maladjustment.

8. *Color shock* has long been regarded as indicative of emotional disturbances and inhibitions in response to emotionally toned stimuli emanating from the environment. Color shock was defined in the present study as follows:

a. A significant delay, over one average deviation, in time of responding to color cards, especially II and VIII.

b. Exclamations or comments by the subject felt to be indicative of disturbance in reaction to these cards.

c. Decline in the quality of responses, deterioration of mode of approach sequence, or failure to produce commonly perceived responses on the color cards.

d. Rejection of color cards with no scorable response. Using similar criteria for color shock, Miale found the reaction to be present in 98 per cent of the neurotic records and in only 20 per cent of the normal records.

9. *Shading shock*, referred to by Klopfer as "sexual" shock, are reactions similar to those described above to the two highly shaded cards (IV and VI) and occasionally to the diffusely shaded card VII. Such a reaction is interpreted as indicative of considerable anxiety, often related to sexual conflicts. This sign was present in 81 per cent of Miale's neurotic records and in only 20 per cent of the normal ones. The presence of either color shock or shading shock is regarded as indicative of poor social adjustment.

10. Finally, the *complete rejection of any card* with no scorable response is rarely observed among normal, healthy adults. Of Miale's psychoneurotics, 47 per cent rejected one or more cards, the range was from one to seven of the ten cards. None of her normal controls showed this type of reaction. Rejections in the present study will be regarded as another sign of maladjustment.

These "signs" of social maladjustment will be treated in two different ways. The absence of signs will be correlated with the criterion ratings to determine the extent of concomitant variations between them by means of the usual Pearson product-moment method. Second, since Miale and Harrower-Erickson (4) suggest that the presence of five or more signs strongly indicates social maladjust-

ment, a biserial correlation coefficient will be computed, the dichotomous variables being designated as records having less than five signs and records having five or more signs of maladjustment.

*Appropriateness of Emotional Expression:* This variable is closely related to certain of the patterns enumerated above, specifically the response categories designated FC, CF, and C. The first is ordinarily interpreted as indicative of appropriate emotional responsiveness while the latter two suggest progressively more disorganized emotionality. The correlations between these individual factors will be determined and then combined to determine the multiple correlation coefficient obtaining among them and the criterion ratings. In addition, patterns 4, 5, 7, and 8 noted above under Social Adjustment are felt to be related to appropriateness of emotional expression. A biserial coefficient of correlation will be run between these patterns and the criterion; one dichotomous variable will be the presence of less than two of these patterns, the other two or more. The former is expected to be related to more appropriate emotionality, the latter with failures to adapt emotional responses to the needs of the situation.

*Characteristic Intensity of Inner Emotional Tension:* Classically, in Rorschach interpretation, human movement responses (M), and more recently animal movement responses (FM) and the perception of inanimate objects in motion (m) have been regarded as associated with the inner life of the individual. The former is deemed representative of a more mature, stable stage of development in the intrapsychic life while the latter two represent progressively a more immature, inhibited, and tension-laden state. Hence, these three factors in the

records will be correlated individually with the criterion ratings on this variable (Variable 25) and then combined to determine the extent of multiple correlation among them and the criterion. Since a low rating indicates minimum tensions and a high rating suggests strongly repressed drives resulting in inner turmoil, a negative correlation coefficient should be expected for the correlation with *M*, a positive one with *m*, with *FM* taking a middle position.

Another pattern will be studied here involving the conception noted above that *M* should exceed *FM* normally. To study this pattern, the writer devised an index expression which results in values ranging from zero to two as follows:  $1 - (M - FM) / (M + FM)$ . Scores closer to zero would represent the preponderance of *M* in the record while scores approaching two reflect the excess of *FM* over *M*. Negative correlation between these values and the criterion ratings would be expected.

These same factors will be treated in still another way. A biserial correlation coefficient will be computed with  $M \geq FM$  and  $M > FM$  as the dichotomous variables.

Since inner emotional tensions are plausibly related to social adjustment (Variable 23b), it is proposed that the ten patterns used there be employed again here. In this instance it would be expected that the more signs of maladjustment, the higher should be the criterion rating on inner emotional tension.

**Sexual Adjustment:** Two Rorschach scores are often used to estimate sexual adjustment developmentally. Animal movement responses (*FM*) are frequently interpreted as indicative of more basic, instinctual, sexual drives which in adults

may be interpreted as a fixation at an early level of psychosexual development. Another way of gauging this factor is in comparison with the more mature inner drives as reflected by human movement responses (*M*). Thus, the number of *FM* responses in the records and the above-described index showing the relative weights of *M* or *FM* will each be correlated with the criterion ratings on Variable 26. It would be expected that each should yield a negative correlation with sexual adjustment if the interpretative assumptions indicated above are to be retained.

Sexual shock reactions, defined under the section on Social Adjustment, are ordinarily interpreted as indicative of anxiety over sexual conflicts and, hence, of sexual maladjustment. In order to assess the value of this pattern a point biserial coefficient of correlation will be run against the criterion ratings, the dichotomous variables being presence and absence of sexual shock in the records.

**Motivation for Professional Status:** There are no factors in the Rorschach which are presumed to be related to such a variable as this one. However, "drive for status rewards" is suggestive of Rorschach interpretations involving the tendency to over-emphasize responses to the whole ink blot (*W*), frequently referred to as "ambition." Whole responses have also been compared with human movement responses and norms are given in the literature which indicate that the healthy balance between these two factors is approximately 2:1. When *W* exceeds expectations, "ambition" over and above basic creative capacities is inferred. Some Rorschach examiners also feel that this same personality complex is indicated by a large number of responses to the whole Rorschach experi-

ment. Therefore, it is proposed that four correlations be run against the criterion ratings on Variable 27: (1) number of responses utilizing the whole blot ( $W$ ), (2) per cent of responses utilizing the whole blot ( $\%W$ ), (3) scores given by the formula ( $W-2M$ ), and (4) total number of responses given ( $R$ ). In each instance positive correlation coefficients would be expected.

*Motivation for Scientific Understanding of People:* Again, this represents a variable which has no clear counterpart in Rorschach scores or patterns. It may be assumed, however, that scores interpreted as reflecting interest in and empathy for others, and thinking which is in keeping with that of one's contemporaries might be plausibly related to this variable. Content categories involving the perception of human beings are an example of the former type while popular responses, i.e., those commonly seen by other persons, are an example of the latter. Thus, three correlations will be run against the criterion ratings on Variable 28: (1) number of responses in which the content was human beings ( $H$ ), (2) per cent of responses in which the content was human beings ( $\%H$ ), and (3) number of popular responses ( $P$ ). In each instance positive correlations might be expected.

*Insight into Others:* There are no particular Rorschach factors specifically related to this variable insofar as the literature is concerned; this is equally true of the next variable, *Insight into Himself*. However, reference has been made from time to time to a more restricted kind of insightfulness, i.e., insight into anxieties. The presence of this personality characteristic is inferred from responses determined in part by form in combination with either dif-

fuse shading and/or surface texture in the ink blots. Diffuse shading ( $K$ ) is interpreted as anxiety in the inner life, hence, the combination of form and diffuse shading ( $FK$ ) represents anxiety over which the individual is able to exert intellectual control and, hence, anxiety into which he has insight. Surface texture, especially in relation to dysphoric concept, is interpreted as anxiety in relation to environmental occurrences; the combination of form and texture ( $Fc$ ) suggests situational anxieties under intellectual control, or anxieties into which the person has insight. Reasoning similarly, form and color responses ( $FC$ ) may be interpreted as controlled, or insightful, emotional responsiveness to environmental stimuli. These patterns will be used in two ways: (1) the sum of responses in which form elements were primary and combined with textural and diffuse shading determinants ( $Fc + FK$ ), and (2) the sum of responses in which form and color were combined determinants, form predominating ( $FC$ ). These will be employed in both Variables 29 and 30 since they seem so closely related by definition and since preliminary study reveals the correlation between them to be .80.

*Quality of Intellectual Accomplishments:* Intellectual quality in Rorschach work is ordinarily inferred from the quality of the subject's responses. Quality is defined as the degree to which a given response is apposite to reality and is designated as  $F+$ . In general, the higher the per cent of  $F+$  responses, the better the quality of the subject's intellectual work. In addition to this factor, originality of responses of good quality ( $O+$ ) is interpreted as high-level intellectual ability. Originality is ordinarily defined as a response given approxi-

mately once in a hundred records. A negatively oriented factor related to this variable is the percentage of animal forms (%A) seen. This score is interpreted as reflecting mental stereotypy when the percentage exceeds half of the total number of responses given. Thus, four correlations will be run against the criterion ratings on Variable 31: (1) per cent of  $F+$  responses, (2) the raw number of original responses given (O), (3) the number of original responses of good quality given (O+), and (4) the percentage of animal responses (%A). In the first three instances, positive correlations should result; in the latter, the correlation should be negative.

*Over-all Suitability for Clinical Psychology:* This variable is obviously neither a specific personality characteristic nor is it one which has ever been related to Rorschach results. However, one might posit the hypothesis that over-all suitability is logically related to over-all social adjustment. Working on this hypothesis, it is proposed that the ten patterns of adjustment used in studying Variable 23b be used here. It will be remembered that the absence of these signs was felt to be related to adjustment, hence, one should expect a positive coefficient of correlation in this case if the hypothesis is to be retained.

# CHAPTER III

## RESULTS

IN THIS chapter we compare the criterion ratings on each variable with (a) the ratings made by Rorschach examiners, and (b) the various Rorschach scores and patterns.

### A. VARIABLE 23b: SOCIAL ADJUSTMENT

Social adjustment was defined for the raters as follows: "*How well does he adjust to varied interpersonal situations? (Includes sexual adjustment only as it affects social adjustment in general.)*" On this variable, the higher the rating, the more it indicated a person who "actively considers the feelings of others; readily gains acceptance in interpersonal relationships; maintains a friendly and likeable manner." The lower the rating, the more it indicated one who "acts without consideration for the feelings of others; often rejected by others; often appears aloof, hostile, or irritable."

The correlations between the criterion and ratings by the Rorschach "judges" are shown in the first column of Table 1.

On this variable the Rorschach judges were able to predict the criterion ratings to the extent indicated by an  $r$  of .35. This can be interpreted as indi-

cating a positive relationship and one which is significantly greater than zero at better than the 1 per cent level of confidence.

As will be noted in Table 1, there is apparently a wide spread of  $r$ 's among the six judges (from .26 to .63), and one is tempted to conclude that Judges A and B were able to estimate the criterion ratings better than the other four judges. However, Rider's method of testing the homogeneity of such a distribution of  $r$ 's yields a chi-square value of 4.27, which with five degrees of freedom gives a  $p$  of .50, indicating that the array of  $r$ 's is probably homogeneous. The inference of a difference between one judge and the others might, therefore, be erroneous.

In Table 2, while the contaminated  $r$  appears to be greater, the null hypothesis that there is probably no difference between these correlation coefficients may be retained ( $p = .16$ ).

The ten Rorschach scores and patterns described in the preceding chapter were studied in an effort to determine to what extent scores alone might be used to predict the criterion ratings on "social adjustment." The absence of these signs

TABLE 1  
CORRELATIONS BETWEEN RORSCHACH RATINGS AND CRITERION RATINGS

| Judges | N     | Obtained correlation coefficients by variables* |     |     |     |     |     |     |     |     |     | $r$ required at— |           |
|--------|-------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|-----------|
|        |       | 23b   | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31  | C42 | .05 level        | .01 level |
| A      | 23    | .61   | .37 | .49 | .45 | .02 | .43 | .28 | .55 | .44 | .25 | .41              | .52       |
| B      | 16    | .63   | .81 | .11 | .37 | .60 | .47 | .41 | .00 | .65 | .67 | .50              | .62       |
| C      | 19    | .32   | .56 | .31 | .17 | .26 | .44 | .24 | .10 | .27 | .65 | .46              | .58       |
| D      | 21    | .28   | .28 | .20 | .23 | .38 | .38 | .03 | .48 | .15 | .20 | .43              | .55       |
| E      | 19    | .26   | .44 | .43 | .38 | .64 | .24 | .24 | .30 | .47 | .46 | .46              | .58       |
| F      | 19    | .27   | .18 | .08 | .15 | .13 | .32 | .27 | .27 | .25 | .23 | .46              | .58       |
| Total  | 120** | .35   | .43 | .24 | .26 | .32 | .38 | .23 | .27 | .33 | .35 | .18              | .24       |

\* Correlations which are statistically significant at the .05 level of confidence or better are printed in *italics*.

\*\* N does not total 120 since one judge rated only three subjects and is excluded from the analysis of individual judges but is included in the total correlational analysis.

TABLE 2  
EFFECT OF CONTAMINATION ON THE CORRELATIONS BETWEEN  
RORSCHACH RATINGS AND CRITERION RATINGS

| Variable | Contami-<br>nated $r$ | Uncontami-<br>nated $r$ | Diff. | Critical<br>ratio | $p$  |
|----------|-----------------------|-------------------------|-------|-------------------|------|
| 23b      | .443                  | .278                    | .165  | 1.02              | .16  |
| 24       | .500                  | .560                    | -.060 | 0.48              | .31  |
| 25       | .348                  | .163                    | .185  | 1.06              | .15  |
| 26       | .118                  | .403                    | -.285 | 1.64              | .05* |
| 27       | .469                  | .193                    | .276  | 1.66              | .05  |
| 28       | .541                  | .497                    | .044  | 0.33              | .37  |
| 29       | .174                  | .280                    | .106  | 0.59              | .28  |
| 30       | .119                  | .400                    | .281  | 1.62              | .05* |
| 31       | .258                  | .367                    | -.109 | 0.62              | .27  |
| 42       | .280                  | .391                    | -.111 | 0.66              | .25  |

\* While this difference is significant at the .05 level of confidence, note that it is in the opposite direction from that hypothesized.

was correlated with the criterion ratings in two different ways; the results are presented in Table 3. The Pearson  $r$ , computed from a scattergram, yielded a coefficient of .47; this is somewhat better than was obtained for the typical judge's ratings ( $r = .35$ ).

The use of these ten factors was studied in another way, since in the literature it has been suggested that the presence of five or more of them is a critical number of differentiating adjustment from maladjustment. The computation of biserial correlation produced an  $r_{bis} = .55$ , which is significantly greater than zero at better than the 1 per cent level of confidence.

#### B. VARIABLE 24: APPROPRIATENESS OF EMOTIONAL EXPRESSION

This variable is defined as: "*How appropriate are his emotional responses to the situation?*" The lower the ratings the more it indicates an individual who "fails to adapt his emotional responses to the needs of the situation; shows disorganized or overly constricted emotional responses." The higher the rating, the more it indicates one who "shows emotional responses of a quality and intensity befitting the situation; reacts

spontaneously but appropriately; shows well-integrated and flexible patterns of emotional behavior."

The correlations between the Rorschach judges' ratings and those of the criterion are shown in column two of Table 1. The results here are similar to those obtained on Variable 23b. The  $r$  is slightly higher and more in keeping with the lower levels of validity obtained on many psychological tests; again, the total  $r$  is positive and significantly greater than zero at better than the 1 per cent level of confidence.

The chi-square test of homogeneity of the distribution of  $r$ 's among the six judges yielded a chi-square value of 8.07 and a  $p$  of .15. This also may be interpreted as indicating a homogeneous array of  $r$  values.

The investigation with respect to contamination yielded results which may be interpreted as indicating no significant contamination effect.

Various Rorschach scores and patterns were studied in relation to this variable. First, the three factors  $FC$ ,  $CF$ , and  $C$  responses were employed. Using the following indices,

- 1 The criterion ratings to be predicted,
- 2  $FC$  responses,

3 *CF* responses,

4 *C* responses, the following zero order *r*'s were obtained:

$$\begin{array}{lll} r_{12} = .21 & r_{23} = .12 & r_{34} = .20 \\ r_{13} = .28 & r_{24} = .01 & \\ r_{14} = .02 & & \end{array}$$

$$M_1 = 4.20 \quad M_2 = 2.97 \quad M_3 = 2.66 \quad M_4 = 0.23$$

$$\sigma_1 = 1.15 \quad \sigma_2 = 2.38 \quad \sigma_3 = 2.66 \quad \sigma_4 = 0.63$$

None of the three zero order *r*'s approaches the size of the correlation be-

tween ratings by the judges and the criterion ( $r = .43$ ), although those involving *FC* and *CF* are significantly greater than zero. The multiple correlation coefficient involving the above correlation matrix yielded  $R_{1.234} = .33$ .

Second, the four "signs": (1) *FC* responses less than two, (2) %*F* responses greater than 50 per cent, (3) presence of

TABLE 3  
COMPARISON OF ESTIMATIONS OF CRITERION RATINGS BY CLINICIANS  
AND FROM RORSCHACH PATTERNS

| Variable   | Estimate of Criterion by Judges (Table 1) | Estimate of Criterion by Rorschach Indices and Patterns   |
|--|---|---|
| 23b. Social Adjustment   | .35*                                      | <i>FC</i> : .47 <sup>a</sup> <i>r</i> <sub>bis</sub> .55 <sup>b</sup>   |
| 24. Appropriateness of Emotional Expression                          | .43                                       | <i>CF</i> : .21<br>.28<br>.48 <sup>d</sup>  |
| 25. Intensity of Inner Emotional Tension                             | .24                                       | <i>M</i> : .35 <sup>c</sup><br><i>FM</i> : .27<br><i>m</i> : .09 <sup>e</sup><br>.04<br>.11<br>.35 <sup>e</sup><br>.06 <sup>f</sup><br>.23 <sup>g</sup>   |
| 26. Sexual Adjustment  | .26                                       | <i>M</i> : .09<br><i>FM</i> : .02<br><i>M:FM</i> : .05<br><i>W</i> : .04<br><i>%W</i> : .07<br><i>R</i> : .12<br><i>W-2M</i> : .17<br><i>H</i> : .16<br><i>%H</i> : .07<br><i>P</i> : .16<br><i>Fc+FK</i> : .16<br><i>FC</i> : .17<br><i>Fc+FK</i> : .08<br><i>FC</i> : .17<br><i>%F+</i> : .04<br><i>%A</i> : .18<br><i>O</i> : .07<br><i>O+</i> : .19<br>.52 <sup>h</sup> |
| 27. Motivation for Professional Status                               | .32                                       |   |
| 28. Motivation for Scientific Understanding of People                | .38                                       |   |
| 29. Insight into Others  | .23                                       |   |
| 30. Insight into Himself   | .27                                       |   |
| 31. Quality of Intellectual Accomplishments                          | .33                                       |   |
| C 42 Over-all Suitability for Clinical Psychology (five years hence) | .35                                       |   |

\* Italicized coefficients are significantly greater than zero at the 5 per cent level or better ( $r_{.05} = .18$ ,  $r_{.01} = .24$ ).

<sup>a</sup> Ten Rorschach patterns of adjustment (see page 5).

<sup>b</sup> Five or more of these ten patterns and less than five used to dichotomize the group (page 6).

<sup>c</sup> Multiple correlation involving the criterion, *FC*, *CF*, and *C* (page 11).

<sup>d</sup> Four Rorschach patterns of emotionality; group dichotomized on the basis of one or less and two or more patterns (page 6).

<sup>e</sup> Multiple correlation involving the criterion, *M*, *FM*, and *m* (page 13).

<sup>f</sup> Index written:  $1 - (M - FM) / (M + FM)$  (page 7).

<sup>g</sup> Group dichotomized on the basis of  $M < FM$  and  $M > FM$  (page 7).

<sup>h</sup> Point biserial correlation; group dichotomized on the presence or absence of sexual shock reactions (page 7).

color shock reactions, and (4) *FC* less than the sum of *CF* plus *C* patterns were studied in relation to the criterion ratings. A biserial *r* was computed, the dichotomous variables being the presence of less than two "signs" on the one hand and two or more on the other. This yielded a biserial *r* of .48, which is significantly greater than zero at better than the 1 per cent level of confidence.

#### C. VARIABLE 25: CHARACTERISTIC INTENSITY OF INNER EMOTIONAL TENSION

This variable is defined as "*How intense is his inner emotional life as inferred from all available clues?*" Here a low rating suggests an individual whose "inner emotional life is characterized by a minimum of persistent internal tensions." A high rating indicates one who "has strongly repressed emotional drives resulting in inner turmoil; great inner conflict and strong pent-up emotions."

Column three of Table 1 presents the correlations between ratings of the Rorschach examiners and the criterion ratings. Here again the total correlation is positive and significantly greater than zero. The distribution of *r*'s among the six judges is such as to yield a chi square of 6.77, *p* = .30 and we may again regard the distribution as relatively homogeneous.

Reference to Table 2 suggests that again suspected contamination apparently does not affect the results to a significant degree.

Rorschach factors reputedly related to "inner emotional tension" were studied. The first of these were the responses involving (1) human movement perceptions (*M*), (2) animal movement (*FM*), and (3) perception of inanimate objects in motion (*m*). The following correla-

tion matrix was found in this investigation:

|                       |                   |                   |                   |
|-----------------------|-------------------|-------------------|-------------------|
| 1 Criterion ratings   |                   |                   |                   |
| 2 <i>M</i> responses  |                   |                   |                   |
| 3 <i>FM</i> responses |                   |                   |                   |
| 4 <i>m</i> responses  |                   |                   |                   |
| $r_{12} = -.27$       | $r_{23} = .49$    | $r_{34} = .22$    |                   |
| $r_{13} = -.04$       | $r_{24} = .31$    |                   |                   |
| $r_{14} = .11$        |                   |                   |                   |
| $M_1 = 5.52$          | $M_2 = 6.30$      | $M_3 = 4.36$      | $M_4 = 0.85$      |
| $\sigma_1 = 1.14$     | $\sigma_2 = 5.11$ | $\sigma_3 = 3.21$ | $\sigma_4 = 1.17$ |

The correlation observed between the criterion ratings and human movement responses alone is approximately the same as that observed between the Rorschach judges and the criterion (.24). Computing the multiple correlation coefficient yields  $R_{1.234} = .35$  which appears to be somewhat better than that yielded between judges' ratings and the criterion.

Other patterns studied included the biserial *r* between patterns of  $M \equiv FM$  on the one hand and  $M > FM$  on the other. This yielded practically no correlation ( $r_{bis} = .09$ ). These same two scores were combined to give an index ranging from 0 to 2 as follows:  $1 - (M - FM) / (M + FM)$ . The resulting indices correlated with the criterion ratings almost not at all ( $r = -.06$ ). The ten patterns used with Variable 23b were used again in this instance, and yielded a Pearsonian *r* of .23; this is about as good as the correlation between the ratings of the judges and the criterion.

#### D. VARIABLE 26: SEXUAL ADJUSTMENT

The general question involved in this variable was: "*To what degree do his sexual needs and activities affect his over-all adjustment?*" Here, the lower the rating, the more it indicated a person whose "sexual needs and activities seriously interfere with his over-all adjustment." The higher the rating, the more likely

it indicated an individual whose "sexual needs and activities definitely enhance his over-all adjustment."

Column four of Table 1 presents the findings with respect to the ability of the Rorschach examiners to predict the criterion ratings on sexual adjustment.

The results here are similar to those obtained on the previous three variables. The total correlation coefficient is positive and significantly greater than zero at less than the 1 per cent level. The distribution of  $r$ 's yields a chi square = 1.64,  $p = .90$ . In line four of Table 2 we observe a significant difference between the  $r$ 's at the 5 per cent level, but not in the expected direction for contamination to have been the cause, since the uncontaminated  $r$  is significantly greater than the contaminated one. There is no clear explanation for this type of difference in relation to the contamination hypothesis.

Rorschach scores selected for study in relation to sexual adjustment included (1)  $M$  responses, (2)  $FM$  responses, (3) the  $M:FM$  ratio and (4) the factor designated as "sexual shock." Briefly, the first three scores and patterns yielded essentially no evidence of correlation being of the order of magnitude  $-.09$ ,  $-.02$ , and  $.05$  respectively. Biserial correlation, on the other hand, in which the dichotomous variables were absence of "sexual shock" and presence of "sexual shock" produced a point biserial  $r$  with the criterion ratings of  $.37$  which is significant at less than the 5 per cent level. In using this result, one predicts a mean criterion rating on sexual adjustment of 4.33 for the group having little or no "sexual shock"; the best prediction for the "sexual shock" group is a criterion rating of 3.43. These means are significantly different at less than the 1 per

cent level of confidence. Each of these means is also significantly different from the mean of the total group (3.82) at about the 1 per cent level.

#### E. VARIABLE 27: MOTIVATION FOR PROFESSIONAL STATUS

Involved in this variable are ratings aimed at stating how strong the subject's drive is for the status rewards of a professional career. Low ratings tend to indicate low drive, high ratings suggest strong drive.

Column five of Table 1 presents the findings indicating the ability of the Rorschach judges to estimate the criterion ratings on this variable. The result here, as reflected in the correlation coefficient of  $.32$ , indicates positive concomitant variation to a degree significantly greater than zero at better than the 1 per cent level of confidence.

Chi square for the distribution of judges'  $r$ 's is 12.36,  $p < .05$ . This is the only array of  $r$ 's which is apparently not homogeneous. In this instance the correlations of Judges B and E are homogeneous and so are those of Judges A, C, D, and F. The two groups of homogeneous  $r$ 's were then combined by the  $z$  transformation and produced a difference significant at less than the 1 per cent level. This suggests the probability that Judges B and E were significantly better at estimating the criterion ratings than were the other four judges.

Line five of Table 2 gives the only evidence in favor of the hypothesis that there might be significantly greater correlation between the Rorschach ratings and the criterion contaminated by the Rorschach examiner's presence on the criterion team than between the Rorschach ratings and an uncontaminated criterion.

The series of Rorschach scores and patterns studied relative to this variable were: (1) number of responses utilizing the whole blot ( $W$ ), (2) per cent of responses using the whole blot ( $\%W$ ), (3) total number of responses given ( $R$ ), and (4) the normative score given by the formula ( $W-2M$ ) yields values designed to show the relative excess of  $W$  over normal expectations of  $M$ .

All of these scores yielded negligible coefficients. That between  $W$  and the criterion was  $-.04$ ; between  $\%W$  and criterion  $-.07$ ; between  $R$  and criterion  $-.12$ ; and ( $W-2M$ ) correlated with the criterion  $-.17$ . None of these are positive nor are they significantly greater than zero at the 5 per cent level of confidence.

#### F. VARIABLE 28: MOTIVATION FOR SCIENTIFIC UNDERSTANDING OF PEOPLE

Here the raters are asked to judge how strong the subject's drives are toward acquiring the facts, theories, and skills necessary for the scientific understanding of individual human beings. A low rating signifies low drive, a high rating a strong one.

Column six of Table 1 shows the findings obtained with respect to this variable. The total correlation is .38 and is both positive and significantly greater than zero at less than the 1 per cent level.

The distribution of  $r$ 's among the six judges yields a chi square of 0.995,  $p > .95$ . This may be interpreted as indicating a homogeneous distribution of  $r$ 's.

The study of the possible effect of a contaminated criterion yielded the results presented in Table 2. From these results it may be concluded that contamination probably had little or no effect

in the direction hypothesized.

Rorschach factors studied in relation to "understanding people" were: (1) number of responses in which the content was human beings ( $H$ ), (2) per cent of responses involving human beings ( $\%H$ ), and (3) number of responses in which percepts were of the type commonly seen by other persons ( $P$ ). None of these produced correlations significantly greater than zero.

#### G. VARIABLE 29: INSIGHT INTO OTHERS

The task here was to rate the subjects on the amount of insight they possess into the attitudes, emotions, and motivations of others. A low rating suggests an individual who "interprets behavior at its face value; is insensitive to any but gross differences in behavior; does not develop any integrated understanding of behavior or of people." A high rating indicates the person who "has good awareness of underlying dynamics of behavior; is sensitive to subtle nuances of behavioral responses; is able to develop integrated understanding of the behavior of people."

The correlational findings relative to the ability of the "Rorschachers" to estimate the criterion ratings on Variable 29 are given in column seven of Table 1. Here again the total correlation of .23 is both positive and significantly greater than zero. The distribution of  $r$ 's among the six judges yields a chi square of 1.87 for which  $p$  is .90. This is interpreted as indicating a homogeneous array of  $r$ 's.

The contamination-study results on this variable are shown in Table 2. The null hypothesis that there is probably no difference between these  $r$ 's is retained, and the idea that contamination was a factor operating to increase the

degree of correlation is rejected.

Two Rorschach scores were considered sufficiently relevant to this variable to warrant study: (1) Sum of responses in which form elements were primary and combined with textual and diffuse shading determinants ( $Fc + FK$ ) and (2) Sum of responses in which form and color were combined determinants, form predominating ( $FC$ ). The former values when correlated with the criterion ratings produced a coefficient of .16, the latter a coefficient of .17. While both of these are positive, they only approach the value (.18) which is significantly greater than zero at the 5 per cent level.

#### H. VARIABLE 30: INSIGHT INTO HIMSELF

On this variable the judges were asked to rate each subject as to "how much insight does he have into the underlying dynamics of his own attitudes, emotions, and motivations?" The higher the rating, the more the rater felt the subject had insight into himself.

The correlations obtained in connection with this variable are presented in column eight, Table 1. The correlation coefficient of .27 is positive and significantly greater than zero at less than the 1 per cent level. The distribution of coefficients among the six judges produced a chi-square value of 3.903;  $p$  is .60 and the distribution may be regarded as homogeneous.

The "contamination" study produced a significant difference but, as in the case of Variable 26, the direction of the difference is the reverse of that expected on the basis of contamination effects.

The same two Rorschach patterns which were used in the preceding variable were studied in relation to this variable: (1) ( $Fc + FK$ ), and (2)  $FC$  responses. The resulting correlations were

positive but not significantly greater than zero. The obtained  $r$ 's were .08 for the pattern ( $Fc + FK$ ) and .17 between  $FC$  responses and the criterion, the latter approaching significance at the 5 per cent level of confidence.

#### I. VARIABLE 31: QUALITY OF INTELLECTUAL ACCOMPLISHMENTS

The key question involved in this variable was: "What is the characteristic quality of his intellectual output?" A high rating suggests one who "characteristically produces intellectual work of high quality." A low rating, one whose "intellectual work is characteristically of low quality."

The correlation observed between the judges and the criterion on this variable was .33. The breakdown of correlations by judges is shown in column nine, Table 1. The total correlation is positive and significantly greater than zero. The distribution of  $r$ 's among the judges produced a chi square of only 3.867 and  $p$  of .60 which indicates the probability that the distribution is homogeneous. Again there is no evidence that contamination had the effect expected.

The Rorschach scores studied in relation to "quality of intellectual accomplishments" included: (1) per cent of responses determined by "good" form ( $\%F+$ ), (2) per cent of responses to animal figures ( $\%A$ ), (3) number of original responses ( $O$ ) and (4) number of good quality original responses ( $O+$ ). In all of these, positive correlations are expected with the exception of  $\%A$  which would be expected to be negative. The correlation coefficients obtained are given in Table 3. The correlations involving  $\%A$  and  $O+$  approach significance at approximately the 5 per cent level of confidence.

# J. VARIABLE C-42: OVER-ALL SUITABILITY FOR CLINICAL PSYCHOLOGY

In the assessment rating scale, Scale C is concerned with characteristics more directly related to clinical psychology per se. It was felt that it would be of interest to include Item 42 for two reasons: (1) because it is the rating relative to over-all suitability, and (2) because it was used in the Preliminary Report as a criterion rating. The rating is future-oriented in that it required a rating "of the subject as he may be five years from now." The reference population is VA Clinical Psychologists who have had four years of academic and on-the-job training (U. S. Civil Service grade-classification of "P-4" or above). The general question was worded thus: *"In view of his assets and liabilities, how well will he be able to carry out the several duties, diagnosis, therapy and research specified for the position of clinical psychologists (P-4 and above) in the VA?"* The higher the rating, the greater his suitability; the lower the rating, the less his suitability with the added stipulation that a "rating of 3 or below means that it is doubtful if the candidate will ever qualify for a P-4 rating."

The results of the correlation analyses for Variable C-42 are presented in column ten of Table 1. The total correlation of .35 is positive and is significantly greater than zero at better than the 1 per cent level of confidence. The distribution of  $r$ 's by judges is homogeneous; chi square being 5.384,  $p = .40$ . Here again contamination does not appear to be a factor operating to increase correlation (Table 2).

There are, of course, no Rorschach

scores or patterns of scores designated as related to this variable but since it is an over-all rating, plausibly related to social adjustment, the ten "signs" employed in relation to social adjustment on Variable 23b were used again here. The obtained correlation coefficient is .52.

## K. THE JUDGES

As noted above, there was some question of variability among the judges with respect to their ability to estimate the criterion ratings. This question was answered in part in the studies of the distribution of  $r$ 's among the six judges variable-by-variable. In brief, all of the distributions indicated the probability of homogeneity with the exception of that on Variable 27 where Judges B and E appeared to be able to predict to a significantly greater degree than the other four judges.

It is the writer's opinion that significant variability does, in fact, exist among the judges even though the above studies seem to contraindicate it. Partial justification for such an opinion may be seen in the following. The individual judges' predictions may be viewed from another standpoint, that of the number of variables each was able to predict to an extent significantly greater than zero at better than the 5 per cent level of confidence (reading across Table 1). This analysis results in the following information:

1. Judges A and B were each able to predict six of the ten variables at approximately the 5 per cent level or less.
2. Judge E was able to predict five variables at approximately this level.
3. Judge C was able to predict only three variables.
4. Judge D was able to predict only one variable.
5. Judge F was able to predict none.

<sup>1</sup> The grade-classification, "P-4," is now designated as "GS-11" in official VA and U. S. Civil Service regulations.

On a priori grounds, there being no statistical technique known to the writer for analyzing such data, it would appear that Judges A, B, and E might be regarded as better judges than C, D, and F, who among them made only 4 predictions at approximately the 5 per cent level or better, compared with the 17 significant predictions made by the former group.

It is obvious that using judges who lack the ability to make accurate predictions would operate as a systematic factor in lowering the over-all correlation between judges' ratings and the criterion. Stated differently, given six judges, all of the caliber of Judges A, B, and E, we should expect significantly higher over-all correlations with the criteria than those obtained and reported above. Other logical arguments in favor of the general hypothesis that the judges vary greatly in ability are evident in even a cursory examination of the experiential backgrounds of the judges themselves. Professional courtesy forbids stating here all of these evidences since to do so would leave open the possibility of identifying the judges and might reflect on them personally. These considerations suggest an ancillary investigation of the importance of the experiential backgrounds of Rorschach judges.

#### L. THE RATING PROCESS

Certain factors in the rating process itself were studied in an effort to try to understand the relative lowness of the correlation coefficients between judges' ratings and criterion ratings.

Among these were included such items as systematic errors of measurements (or better, errors in rating) with regard to the requirement that the raters fit their ratings into a predetermined distribu-

tion (see Appendix A); limited range or spread of ratings among the eight provided by the scales; and the setting in which ratings were made. Some evidence was uncovered to support the idea that the raters did not produce a "good fit" in distributing their ratings as prescribed and also that there was a limited range of ratings used. While these errors may be trivial in their consequences, they are reported as sources of error for what they are worth.

The fact that the Rorschach examiners found themselves functioning in a situation somewhat removed from their usual clinical settings, under a certain amount of pressure of time, and making unique interpretations in the form of ratings on a rating scale with which they had had limited experience is a factor worthy of consideration. At least this suggests that the general situation was not an optimum one for careful, accurate work with a complex instrument.

While nothing can be done about the first two factors at the moment, the matter of experience with the rating scale might suggest the hypothesis that with experience in the use of the scale, correlation might increase. This possibility was examined by dividing the six classes in half and comparing the correlations based on Rorschach estimates made during the first three weeks with those based on Rorschach estimates made during the last three. The results of this analysis are presented in Table 4. Here it will be observed that in general the correlations either remained about the same or increased. Thus, in Variables 24, 25, 26, and 27 there is no marked change; in the remaining variables there appears to be a more pronounced change in the direction expected. The analyses of the significance

TABLE 4

SIGNIFICANCE OF DIFFERENCE BETWEEN RORSCHACH AND CRITERION CORRELATION COEFFICIENTS FOR FIRST THREE WEEKS (I-III) AND LAST THREE WEEKS (IV-VI) OF ASSESSMENT

| Variable | Obtained $r$ |       | Diff. <sub>s</sub> | Critical Ratio | $P$ |
|----------|--------------|-------|--------------------|----------------|-----|
|          | I-III        | IV-VI |                    |                |     |
| 23b      | .25          | .49   | .2806              | 1.56*          | .06 |
| 24       | .43          | .41   | .0243              | 0.13           | .45 |
| 25       | .26          | .23   | .0320              | 0.18           | .43 |
| 26       | .29          | .24   | .0538              | 0.30           | .38 |
| 27       | .31          | .35   | .0449              | 0.25           | .40 |
| 28       | .38          | .51   | .1627              | 0.90           | .18 |
| 29       | .18          | .30   | .1275              | 0.71           | .24 |
| 30       | .16          | .43   | .2985              | 1.66           | .05 |
| 31       | .25          | .44   | .2168              | 1.21           | .11 |
| 42       | .24          | .48   | .2782              | 1.55           | .06 |

\*  $\sigma_{D_s} = 0.18$  based on  $N$  (I-III) = 61 and  $N$  (IV-VI) = 59.

of the differences between these  $r$ 's reveals that the differences are probably "true" ones, in the instances of Variables 23b, 30, and 42 at or about the 5 per cent level of confidence. Thus, it would appear that there is some reason to believe that experience with the rating scale led to better predictions.

Certainly in connection with all these considerations, mention must be made of the fact that correlations of this type

are undoubtedly lowered by two other important factors: (1) the fact that the Rorschach is as yet only a crude instrument and even were it otherwise, one would not expect anywhere near a perfect analysis or evaluation through any single psychometric technique; and (2) the fact that the rater himself, making subjective estimates such as he is required to do, is no doubt a potent source of uncontrolled error of estimate.

## CHAPTER IV

### SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

THE problem of this study is the validity with which personality attributes may be estimated from data obtained by means of the Rorschach method of psychodiagnosis. Two aspects of the general problem have been considered: (1) the validity of estimates made by Rorschach examiners based upon Rorschach protocols they had obtained; and (2) the validity of various Rorschach scores and patterns of scores taken directly from the Rorschach records and regarded as related to the variables in question.

The procedure was to collect criterion ratings made by teams of observers who had had the opportunity to observe from many diverse viewpoints 120 male, VA trainee subjects throughout a week of intensive assessment activities provided in the University of Michigan Assessment of Clinical Psychologists Project during the summer of 1947. The subjects were assessed in groups of 24 over a period of six weeks. Assessment ratings were made on a specially devised rating scale at the end of each week of assessment. In this study only the more covert, genotypic variables constituting Scale B and the "over-all suitability" rating on Scale C were employed. Next, clinical ratings on the same variables made by Rorschach examiners and based on the Rorschach protocols and psychograms were obtained and correlated with the criterion ratings. Since the latter ratings were made by a total of six Rorschach examiners, the correlations between the ratings of each individual examiner and the criterion were also run in an effort to estimate the factors of ability and

variability among the examiners. In each case, the total correlation based on all 120 cases was tested to determine the possibility of curvilinearity, with the result that all of the correlations appeared to be linear, *eta* never exceeding the product moment coefficient at less than the 5 per cent level of confidence.

For each of the 10 variables, Rorschach scores and patterns deemed to be of value in estimating the variable in question were isolated. These were then taken directly from the Rorschach records and correlated with the criterion ratings by correlational methods most in keeping with the type of data being studied; these included product-moment, biserial, and multiple-correlation techniques.

The results of these investigations indicated that in all 10 of the variables studied, the Rorschach examiners were able to estimate the criterion ratings positively and to a degree significantly greater than zero at approximately the 1 per cent level of confidence. The range of the correlation coefficients was from .23 to .43.

Since Rorschach examiners sat on half of the criterion teams, the possibility of their having contaminated the criterion ratings and thus having increased the correlations between their Rorschach ratings and the criterion ratings they helped to establish, was studied by comparing the "contaminated" correlations with the "uncontaminated." It was concluded that contamination as defined above was not particularly effective in spuriously increasing the correlation coefficients.

The several Rorschach scores and patterns studied revealed much variability in their capacity to predict the criterion ratings, ranging from low negative correlations to a positive .52. Some of this variability is undoubtedly due to the fact that in several instances the Rorschach patterns used were only approximations of the variables in question. Thus, Variable 27: Motivation for Professional Status was regarded (in terms of the Rorschach) as essentially a question of "drive and ambition"; Variable 28: Motivation for Scientific Understanding of People was interpreted as "interest in and empathy for others"; and the two "insight" variables, 29 and 30, were correlated with Rorschach patterns suggestive of "insight into anxieties," rather than insight into others and into himself as defined on the rating scale. Correlations significantly greater than zero were obtained on the following variables:

1. Variable 23b: Social Adjustment
2. Variable 24: Appropriateness of Emotional Expression
3. Variable 25: Characteristic Intensity of Inner Emotional Tension
4. Variable 26: Sexual Adjustment
5. Variable 31: Quality of Intellectual Accomplishments
6. Variable C-42: Over-all Suitability for Clinical Psychology (defined as "social adjustment" in selecting Rorschach patterns).

In comparing the obtained correlations in the above instances with the correlations between the clinical ratings made by the Rorschachers and the criterion ratings, it was found that in no case was there a difference significant at the 5 per cent level or less.

In all the other variables, the clinically oriented estimates were superior, and it is interesting to note that these are precisely the variables noted above

for which only approximate Rorschach patterns could be devised.

Since it is commonly felt that correlations should be near .60 in order to speak of valid predictions, it would appear that the obtained results fall far short of indicating validity for either the ratings made by the Rorschach examiners or the estimates based on Rorschach scores. On the other hand, when investigating psychological problems, even very small correlations, if statistically significant, are frequently indicative of psychologically lawful relationships. The fact that the correlation coefficients are small may only mean that the measurement situation is contaminated, uncontrolled, not clearly defined, or that measurement itself is crude owing to the measuring instrument employed. In the present study, it has been demonstrated that many of these latter factors were operating to varying degrees.

While there was in general no statistically significant degree of variability among the predictions of the six Rorschach judges on the several variables, evidence in the form of the number of variables estimated at less than the 5 per cent level of confidence indicates the probability that three of the Rorschach judges were relatively "good," producing a total of 17 significant predictions, in contrast to the remaining three who produced a total of only 4 significant estimates. It is probable that the three inferior Rorschach raters tended to lower the total correlations. Partial evidence would support this split of the judges on the basis of their professional and experiential backgrounds.

In view of the foregoing, and in view of the relative inadequacy of any single technique such as the Rorschach method to supply all the answers, it is not sur-

prising that the observed correlations were as low as they were, and gratifying that they were so consistently positive and statistically significant. It is the writer's opinion that had a large part of the sources-of-error variance been controlled, correlations much nearer to a level suggestive of valid prediction would have resulted.

On the basis of these results we may conclude that:

1. Clinicians, using Rorschach data, are able to make estimates of covert personality characteristics with a validity coefficient of the order of .35, as represented by the present sample of ten attributes.

2. Relatively clear personality attributes and complexes, such as "social adjustment" and "appropriateness of emotional expression," can be equally well estimated from certain Rorschach scores or patterns of scores; those which are more specific, such as "motivation for professional status" or "motivation for scientific understanding of people," were not as successfully estimated by the score approach as they were by the clinical approach.

3. Some Rorschach examiners may be adjudged "good" raters while others must be regarded as "poor" raters; the differ-

ence seems to lie in the difference of their backgrounds of professional training, experience, and interests.

A number of problems for further investigation suggest themselves, a few of which may be mentioned here. In the first place, a new set of ratings, completely "blind," might be obtained from a new panel of Rorschach "experts," in order to evaluate the possible effects of personal contact with the subjects. Second, the problem of reliability of Rorschach ratings should be studied by having a number of Rorschach examiners rate the same records and by studying interjudge agreements. Third, more extensive study should be made of the importance of extent of familiarity with the Rorschach method, breadth of general clinical experience, working knowledge of personality dynamics, and so forth as factors correlated with the ability of clinicians to estimate personality attributes from data obtained by the Rorschach and other projective methods. Fourth, and related to the preceding suggestion, work should be done to determine the more specific effects of the personality of the clinician upon his Rorschach-based ratings of personality attributes.

## APPENDIX A

### RESEARCH PROJECT ON THE SELECTION OF CLINICAL PSYCHOLOGISTS

#### REFERENCE POPULATIONS FOR RATINGS

For Scales A and B the candidate is rated as he is today. The reference group is first-year clinical psychology graduate students in universities accredited by the APA to offer training in clinical psychology.

For the Criterion Skills (Scale C), the candidate is rated as he will be five years from now. The reference population is VA clinical psychologists who have had four years of academic and on-the-job training (P-4 and above). In rating a candidate on the Criterion Skills, the assumption

is made that he will have completed the training and will have been employed by the VA. A rating of 3 or below means that it is doubtful that the candidate will ever qualify for a P-4 rating with respect to the trait being rated. It is possible that some candidates will later qualify for a P-4 position even though they rate 3 or below on a few Criterion Skills.

#### RATING SCALE

All ratings will be made in terms of an eight-point scale illustrated graphically in Figure 1.

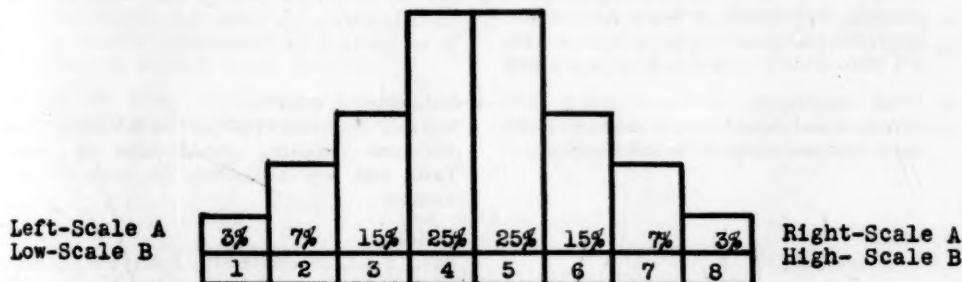
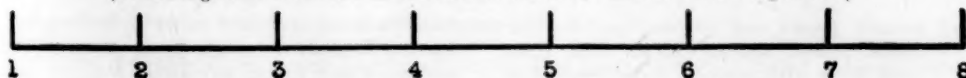


FIG. 1. Theoretical distribution of ratings

#### RATING SCALE DEFINITIONS

##### Scale A (#1-22)

(For ratings on this scale, 1 = extreme on left side, 8 = extreme on right side.)



Note: The attributes in Scale A refer to behavior which can be directly observed on the surface. In using this scale, disregard any inferences about underlying dynamics or causes.

- |   |   |
|---|---|
| 1. <i>Readiness to cooperate</i><br>Finds ways of cooperating despite difficulties. | -v- <i>Obstructiveness</i><br>Frequently is "difficult."  |
| 2. <i>Consistent</i><br>Behaves in the same general way from day to day.            | -v- <i>Inconsistent</i><br>Shows changing and unpredictable moods and behavior.   |
| 3. <i>Assertive</i><br>Attempts to dominate or influence his associates.            | -v- <i>Submissive</i><br>Tends to let people have their way.  |
| 4. <i>Depressed</i><br>Does not smile or laugh easily or frequently.                | -v- <i>Cheerful</i><br>Generally bubbling over with good cheer. Optimistic. Enthusiastic. Prone to cheerful, witty remarks. |

5. *Irresponsible*  
Not inclined to take responsibilities seriously. Thoughtless. Unaware of responsibilities of his age. (Do not confuse with #17: Conscientious vs. not conscientious.)  
-v- *Serious*  
Accepts appropriate responsibilities toward others. Shows seriousness of purpose.
6. *Gregarious (adient toward people)*  
Is attracted by and moves toward people in social situations.  
-v- *Non-gregarious (abient from people)*  
In social groupings, isolates himself.
7. *Easily Upset*  
Easily embarrassed or put off balance. Gets confused in emergency. Blushes, shows excitability, becomes incoherent. Momentary "nervousness," not general emotionality.  
-v- *Unshakable*  
Self-possessed. Does not lose composure under emotional provocation.
8. *Narrow Interests*  
Uninformed in many areas. Narrow, simple, interests. Provincial outlooks.  
-v- *Broad Interests*  
Talks and acts in an informed way in a wide variety of areas.
9. *Suspicious*  
Believes rather too quickly that he is being unfairly treated. Imagines on insufficient grounds that people strongly dislike him. Interprets things as having reference to himself when none is intended. Feels persecuted.  
*Trustful*  
Accepts statements of others without suspicion (not necessarily "gullible.")
10. *Generous*  
Generous and considerate in actions involving others at considerable self-sacrifice.  
-v- *Self-centered, selfish*  
Irritable and resentful or withdrawing from situations requiring consideration of others. Talks and acts exclusively in terms of own interests.
11. *Silent*  
Says very little.  
-v- *Talkative*  
Talks a lot, to everybody. Takes the initiative in conversations. When addressed, responds quickly.
12. *Cautious*  
Avoids the strange and new. Looks at all aspects of a situation overcautiously. Does the safe thing.  
-v- *Adventurous*  
Seeks and readily enters into new experiences and situations.
13. *Socially poised and adept*  
Polite, poised, and tactful in social situations. Deals with people gracefully and skillfully.  
-v- *Socially clumsy, awkward in social situations*  
Tactless in social situations. Crude in speech and manners. Omits proper formalities. Does not meet people gracefully. *Gauche*.  
Note: Applies to relationships with one or more people.
14. *Rigid*  
Sticks to his own ideas and does not adapt to ways of doing things differently from his own. Does not change and broaden with experience.  
-v- *Adaptable, flexible*  
Appropriately modifies his behavior to situations. Accepts compromises where needed. Is not upset, surprised, baffled, or irritable if things are different from what he expected.
15. *Dependent*  
Asks for reassurance and support. Attaches himself to individuals and groups instead of relying on himself.  
-v- *Self-sufficient*  
Does not lean on others in situations calling for independent action.
16. *Placid*  
Outwardly calm and relaxed.  
-v- *Worrying, anxious*  
Appears to worry constantly, harried; overtly anxious. Shows agitation.

17. *Conscientious*  
Behavior characterized by truthfulness, honesty, unselfishness.
- v- *Not conscientious*  
Not too careful about right and wrong where own wishes are concerned. Not particularly just, honest, or unselfish. Inclined to somewhat shady transactions.
18. *Imaginative*  
Has a rich and vivid imagination. Thinks of unusual angles and aspects of a question. Sensitive to a multitude of emotional and other possibilities not realized by the average person.
- v- *Unimaginative*  
Lacks imagination. Approaches problems in a literal matter-of-fact fashion. Unresponsive to the subtleties in a situation.
19. *Marked Overt Interest in Opposite Sex*  
Dates a good deal and/or talks a lot about opposite sex. Extremely aware of women as women. (Disregard inferred needs or drives.)
- v- *Slight Overt Interest in Opposite Sex*  
Talks very little about women. Does not use opportunities for contacts with women.
20. *Frank*  
Comes out readily with his real feelings on various questions. Expresses his feelings, sad or gay, easily and constantly.
- v- *Secretive*  
Keeps his thoughts and feelings to himself.
21. *Dependent Minded*  
Intellectually dependent on others. Generally accepts the opinion of a group or of authority without much thought.
- v- *Independent Minded*  
Thinks things out for himself. Examines every question persistently and individualistically. Makes up his own mind.
22. *Limited overt, emotional expression*  
Is apathetic, sluggish, or constricted.
- v- *Marked overt emotional expression*  
Shows hyperkinetic, agitated behavioral responses; is overly excitable and over-demonstrative.

Scale B (# 23-31)

(For ratings on this scale, 1 = left side or low, 8 = right side or high.)

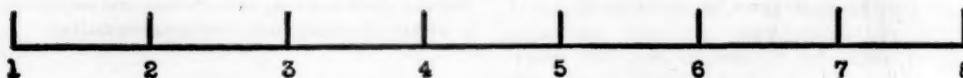


Since many of the following attributes (# 23-31) are broad factors, it is unlikely that any person will fit all of the phrases grouped together at one pole of a given variable. Note also that for some items, neither extreme necessarily represents a desirable attribute.

- 23a. *Ability to develop and maintain warm interpersonal relationships.*
- 23b. *Social Adjustment:* How well does he adjust to varied interpersonal situations? (includes sexual adjustment only as it affects social adjustment in general.)
- Acts without consideration for feelings of others; often rejected by others, often appears aloof, hostile, or irritable.
- Actively considers feelings of others; readily gains acceptance in interpersonal relationships; maintains a friendly and likeable manner.
24. *Appropriateness of Emotional Expression:* How appropriate are his emotional responses to the situation?
- Fails to adapt his emotional responses to the needs of the situation; shows disorganized or overly constricted emotional responses.
- Shows emotional responses of a quality and intensity befitting the situation; reacts spontaneously but appropriately; shows well-integrated and flexible patterns of emotional behavior.
25. *Characteristic Intensity of Inner Emotional Tension:* How intense is his inner emotional life as inferred from all available clues?
- Inner emotional life characterized by a minimum of persistent internal tensions.
- Has strongly repressed emotional drives resulting in inner turmoil; great inner conflict and strong pent-up emotions.

26. *Sexual Adjustment*: To what degree do his sexual needs and activities affect his over-all adjustment?  
 His sexual needs and activities seriously interfere with his over-all adjustment.      His sexual needs and activities definitely enhance his over-all adjustment.
27. *Motivation for Professional Status*: How strong is his drive for the status rewards of a professional career?
28. *Motivation for Scientific Understanding of People*: How strong are his drives toward acquiring the facts, theories, and skills necessary for the scientific understanding of individual human beings?
29. *Insight into Others*: How much insight does he have into the attitudes, emotions, and motivations of others?  
 Interprets behavior at its face value; insensitive to any but gross differences in behavior; does not develop any integrated understanding of behavior or of people.      Has good awareness of underlying dynamics of behavior; is sensitive to subtle nuances of behavioral responses; is able to develop integrated understanding of the behavior of people.
30. *Insight into Himself*: How much insight does he have into the underlying dynamics of his own attitudes, emotions, and motivations?
31. *Quality of Intellectual Accomplishments*: What is the characteristic quality of his intellectual output?  
 Intellectual work is characteristically of low quality.      Characteristically produces intellectual work of high quality.

Scale C—Criterion Skills (#32-42)  
 (For ratings on this scale, 1 = low, 8 = high)



Ratings on #33-42 refer to the subject's performance five years hence.

What will be his level of competence or skill in the varied aspects of:

32. *Academic Performance*: (during next three or four years) How well will he:  
 Effectively master course content, successfully complete courses in general psychology, clinical psychology, statistics, and related fields; satisfy language requirements for the doctorate; pass general examinations.
33. *Clinical Diagnosis*: How well will he:  
 Recognize dynamics underlying particular responses in both objective and projective tests, observe significant interrelationships among responses, relate findings to case history and other clinical data.  
 Elicit from the patient information required for mental status examinations and case histories; ascertain and evaluate attitudes and incidents of psychological significance in the patient.  
 Synthesize clinical findings to arrive at an integrated picture of personality development, structure, and function.
34. *Individual Psychotherapy*: How effectively will he:  
 Conduct various types of individual psychotherapy.
35. *Group Psychotherapy*: How effectively will he:  
 Conduct various types of group psychotherapy.
36. *Research*: How well will he:  
 Recognize and define important research problems in clinical psychology; critically evaluate and apply the research findings of others; think with originality and scientific rigor; employ appropriate experimental design and statistical methods; grasp practical implications of findings, present results and conclusions in clear, comprehensive, and well-organized form.
37. *Administration*: How well will he:  
 Plan and develop psychological programs; make proper administrative decisions; delegate responsibility appropriately; elicit cooperation from subordinates and superiors; maintain high morale among his staff; carry out or direct an appropriate public relations program.

38. *Supervising Clinical Psychologists*: How well will he:  
Carry out the professional supervision of subordinates assigned to him for duty and on-the-job instruction; assign their duties; evaluate their performance; instruct them in clinical techniques; perform other aspects of in-service training.
39. *Teaching Psychology* (in a College or University): How well will he:  
Teach college courses in general psychology; motivate students, present concepts and procedures, stimulate critical thinking about and integration of course materials, evaluate the products of learning.
40. *Professional Interpersonal Relations*: How well will he:  
Work cooperatively with superiors, subordinates, members of the mental hygiene team, and other professional personnel concerned with the patient's welfare; participate in the give and take of staff conferences; contribute to group decisions.
41. *Integrity of Personal and Professional Behavior*: How well will he:  
Recognize and fulfill professional responsibilities; live up to personal commitments; show loyalty to professional obligations in the event of outside pressure or promise of personal gain; maintain discretion concerning professional matters; appropriately conform with commonly accepted standard of moral and social behavior; refrain from coloring facts, evasion, lying, etc.
42. *Over-all Suitability for Clinical Psychology*: In view of his assets and liabilities, how well will he be able to:  
Carry out the several duties, diagnosis, therapy, and research specified for the position of clinical psychologist (P-4 and above) in the VA.

# REFERENCES

1. BECK, S. J. *Rorschach's test, Vol. I: Basic processes*. New York: Grune and Stratton, 1944.
2. CATTELL, R. B. *Description and measurement of personality*. Yonkers-on-Hudson: World Book Company, 1946.
3. KLOPPER, B., & KELLEY, D. M. *The Rorschach technique*. Yonkers-on-Hudson: World Book Company, 1942.
4. MIALE, F. R., & HARROWER-ERICKSON, M. R. Personality structure in the psychoneuroses. *Rors. Res. Exch.*, 1940, 4.
5. RIDER, P. R. *Modern statistical methods*. New York: Wiley, 1939.
6. Progress Report and Preliminary Findings: University of Michigan project in the assessment of clinical psychologists. Mimeographed and privately circulated, 1948.